PRODUCT SUPPORT MANUAL

Y1-03-0160
Rev. B

Mini B_{300}™ ILS H_2ON

Product No. 2767

Emergency Position Indicating Radio Beacon (EPIRB)

ETSI Type Approved to ETS 300 152

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COBHAM
Avionics & Surveillance

*** * * WARNING * * ***

THIS TRANSMITTER IS AUTHORIZED FOR USE ONLY DURING SITUATIONS OF GRAVE AND IMMINENT DANGER

DELIBERATE MISUSE MAY INCUR A SEVERE PENALTY

Foreword:

Congratulations and thank you! You have just purchased the finest Class B personal EPIRB available on the market. Other brands merely attempt to meet the requirements established by authorities. By purchasing this EPIRB you have distinguished yourself as one of the safest persons in boating.

To be a responsible EPIRB owner:

- Read this manual.
- Activate your EPIRB **ONLY** in an emergency.
- Prepare an emergency evacuation plan and rehearse it.
- In a grave and imminent situation, where you have exhausted all other means of rescue, activate your EPIRB and leave it "ON" until Search And Rescue forces arrive. Do not turn it off and on in the misguided belief that you are saving battery power.
- **NEVER** set off a false alarm. Follow the instructions in section 5 to operationally test your EPIRB.

Search and Rescue forces will respond to all known emergencies. This EPIRB will alert the authorities to an emergency if activated in most coastal waters, (excluding parts of Africa and Antarctica). The USCG reports that 99% of all Class A & B EPIRB activation's are false. The high number of false activation events places an unnecessary burden on the Search and Rescue system. Don't be guilty of causing a false or accidental activation. Help educate others that irresponsible handling of EPIRBs risks lives by slowing the response to real emergencies and wastes tax payer dollars. Please call or write for answers to questions or for information on other safety products manufactured by ACR Electronics, Inc.

Limited Warranty This product is warranted against factory defects in material and workmanship for a period of one (1) year from date of purchase or receipt as a gift. During the warranty period ACR Electronics, Inc. will repair or, at its option, replace at no cost to you for labor, materials or return transportation, provided you obtain a Return Authorization and the return shipping is prepaid to ACR Electronics, Inc., 5757 Ravenswood Road, Fort Lauderdale, FL 33312-6645. To obtain a Return Authorization call our Customer Service department at (800)432-0227 or +1(954)981-3333, ext. 112. This warranty does not apply if the product has been damaged by accident or misuse, or as a result of service or modification by other than the factory.

Except as otherwise expressly stated in the previous paragraph, the COMPANY MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER WITH RESPECT TO THIS PRODUCT. The Company shall not be liable for, consequential or special damages.

In order to place the warranty in effect, the accompanying registration card must be returned to us within ten (10) days of purchase or receipt as a gift.

ACR MINI B_{300} ™ ILS H_2ON EPIRB
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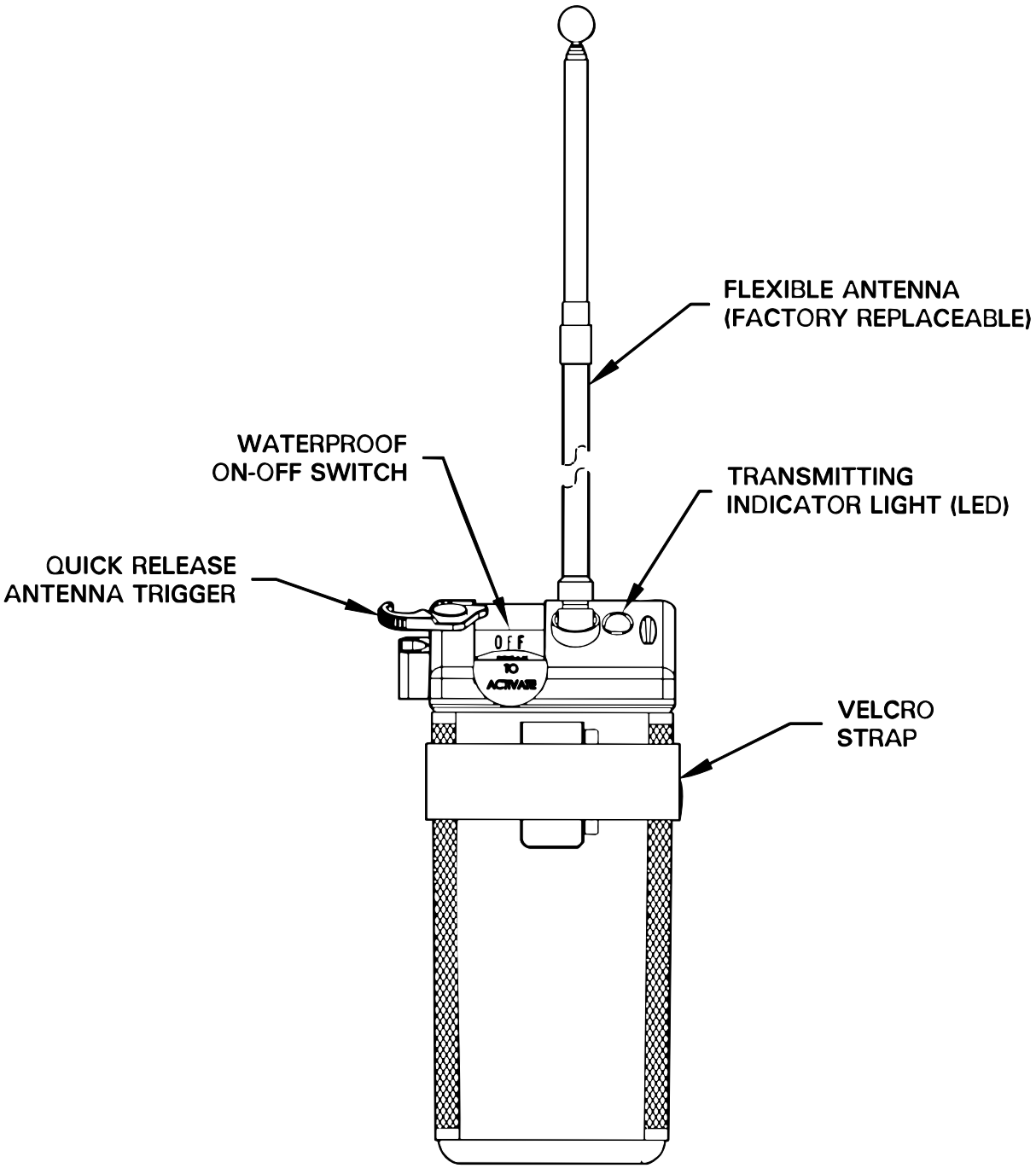

FIGURE 1: MINI B300™ ILS H2ON EPIRB

SECTION 1 - INTRODUCTION

1.1 GENERAL

This manual provides installation, operation and maintenance instructions for the **MINI B_{300}™ ILS H_2ON** Emergency Position Indicating Radio Beacons (EPIRB - Class B) hereinafter referred to as the Beacon. This section describes the characteristics and details of the Beacon (See Figure 1). You must add this device to your FCC ship station license if you have one.

1.2 PURPOSE

The Beacon is an item of survival equipment that is designed to be carried or on your person, so as to be readily available in any emergency. It may also be used on the deck of vessels, on survival craft, as well as attached to survival suits, etc. When turned "ON," it transmits tone-modulated signals (VHF) so that rescue aircraft or vessels equipped with suitable direction finding receiving equipment can "home" to the transmitting unit. This Beacon meets FCC Rules for improved satellite detection.

1.3 SATELLITE DETECTION

EPIRB use is directly affected by the COSPAS-SARSAT System. SARSAT is an acronym for Search and Rescue Satellite-Aided Tracking. This international system has proven that satellites can be used to detect distress alerts and to determine position from Class A and B EPIRBs.

COSPAS-SARSAT frequently plays a key role in many operational Search and Rescue decisions. Since the first recorded rescue in 1982, over 10,000 persons have been rescued as a direct result of SARSAT. These successes have brought more public awareness and an expanding growth in the use of EPIRBs. (Satellite detection of this beacon will cease by 2009. See www.acrelectronics.com for details.)

1.4 AUTHORIZATIONS

The **MINI B_{300}™ ILS H_2ON** (Emergency Position Indicating Radio Beacon) EPIRB meets the requirements of Federal Communications Commission (FCC) Part 80.1055 as a Class "B" EPIRB, for marine use.

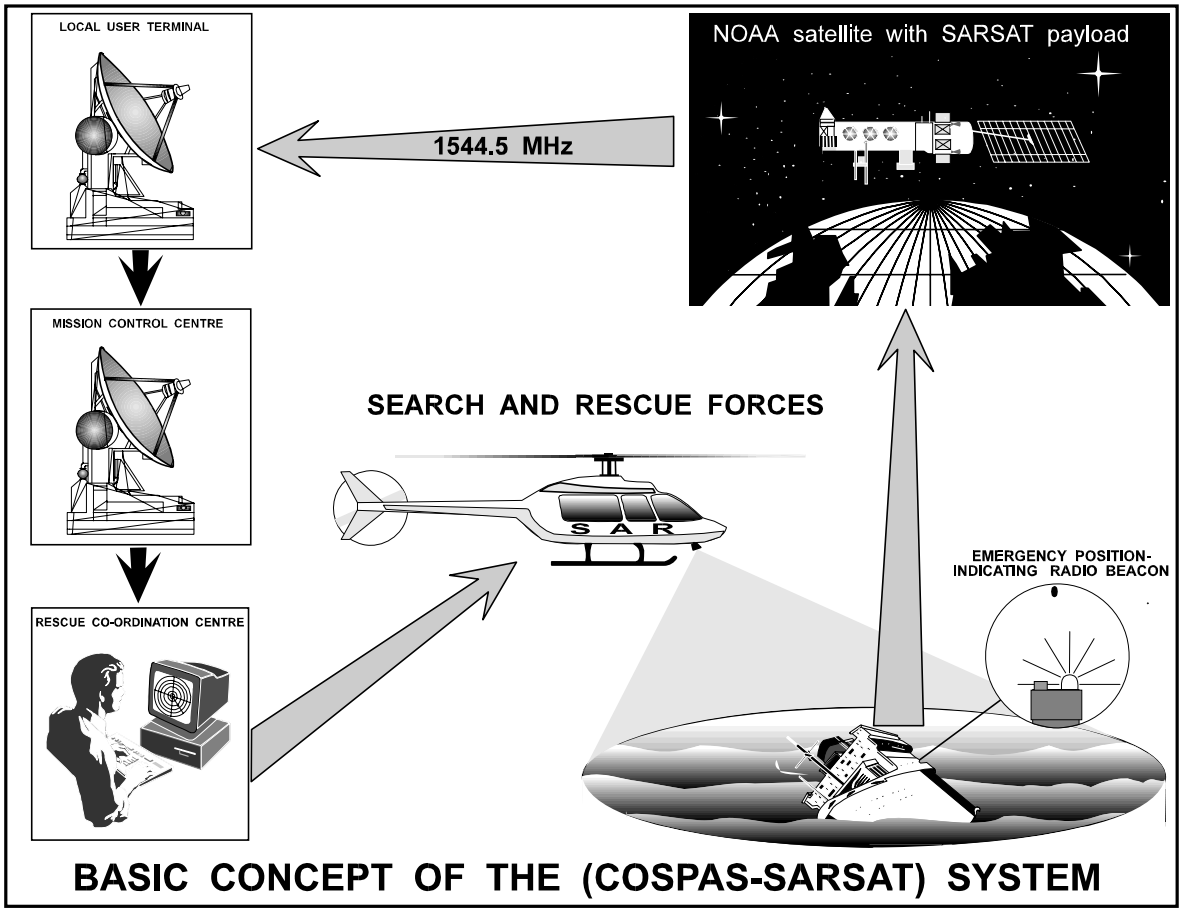

FIGURE 2: SATELLITE DETECTION

1.5 CHARACTERISTICS

The **MINI B_{300}™ ILS H_2ON** Beacon is an o-ring sealed battery operated unit. The beacon case, with its external antenna is waterproof. The semiconductor circuits are mounted within the case assembly, which also contains the battery power supply.

An "ON-OFF" switch is installed on top of the Beacon, along with a light emitting diode (LED) operation indicator, and also has an in-line speaker, which emits an audio warble whenever the Beacon is transmitting. The audio sound is identical to the signal being transmitted. This sound serves as an **ALERT** that the Beacon is on and directly indicates that the Beacon is functioning. ACR designed the **MINI B_{300}™ ILS H_2ON** with an audible warble to help reduce the incidence of accidental activation. The audible warble also allows you to self-test your beacon more effectively. **NEVER** operationally test your Class B EPIRB except as noted in Section 5.2 of this manual.

The Beacon may be stowed in your pocket, any convenient place, mounted in a special bracket aboard a vessel, or stowed inside survival craft.

1.6 TECHNICAL DATA

Pertinent technical data is listed below:

ITEM	CHARACTERISTICS
Frequency	121.5 MHz
Power Output	Minimum 75 mW during 24 hours operation
Operating Life	24 hours minimum at -10°, (-14°F) longer in temperate climates
Battery	Lithium battery, 6V Duracell DL223A, (or equivalent) sold with beacon. Rated replacement life: 10 years or immediately after extended use or emergency.
Emission	Type A3X
Modulation	Downward sweeping tone between 1600 and 300 Hz at 2 to 4 sweeps per second
Frequency Stability	± 3.5 KHz (Crystal controlled)
Operating Temperatures	-20°C to +55°C (-4°F to +131°F)
Activation	Manual "ON-OFF" switch (P/N 2767 water activated)
Size	5.0" H x 2.6" W x 1.6" D (127mm x 66mm x 41mm) excluding antenna
Weight	7.6 ounces (215 g)
Accessories (Optional)	**MINI B_{300}™ ILS H_2ON** Mounting Bracket, PN 9321

SECTION 2 - INSTALLATION

2.1 GENERAL

The **MINI B_{300}^{TM} ILS H_2ON** Beacon has been designed for multi-purpose installation for survival use, personnel, rafts, floats and survival craft. It should be stowed on your persons, where it will be readily available in an emergency, or mounted where easily accessible with the optional **MINI B_{300}^{TM} ILS H_2ON** Mounting Bracket (P/N 9321).

SECTION 3 - OPERATION

3.1 GENERAL

The **MINI B_{300}^{TM} ILS H_2ON** beacon is designed to be manually deployed, and either automatically or manually activated. The beacon should be hand held in a vertical orientation (antenna up) to transmit effectively. No part of the antenna should be in contact with the water. The beacon will float on it's own, but *not* in the optimum transmission position. The beacon features an antenna quick release trigger. **Warning. Do not hold beacon near face or body while releasing the antenna. Antenna is spring loaded and deploys rapidly**. The release trigger holds the antenna down at the beacon's side in the stowed position. When the beacon is switched to the "ON" position the antenna will spring into an upright position. The antenna should then be extended to its full length for optimum transmission performance. The beacon should be operated in an area free of obstructions.

3.2 AUTOMATIC ACTIVATION

The beacon can be set to activate when in contact with water. To ready the beacon for this type of operation several steps need to be taken. **Warning. Do not hold beacon near face or body while releasing the antenna. Antenna is spring loaded and deploys rapidly**. First, move switch to "ON" position. This will release the antenna. The Beacon is now in the *armed* position. Second, fold the antenna to the stowed position and manually recapture with the release trigger. The release trigger will also engage the "ON" switch and hold its position. The beacon is now ready to be carried in a pocket or mounted in a bracket.

When the upper portion of the beacon comes in contact with water, the beacon will begin to transmit. Transmission is confirmed by the steady red LED and followed by the audio warble and flashing red LED. To optimize signal performance, remove beacon from pocket or bracket. Manually release the antenna to the upright position and extend to its full length.

3.3 MANUAL ACTIVATION

The beacon can be manually activated whether in the "OFF" position or in the "armed" position. Manually activating the beacon requires repeated movement of the "ON-OFF" switch. ***Warning - Do not hold beacon near face or body while releasing the antenna. Antenna is spring loaded and deploys rapidly***.

From the "OFF" position, lift switch and move to the "ON" position. This will release the antenna from the stowed position. Lift the switch again and move to the "OFF" then "ON" position again

within 2 seconds. The beacon will begin transmitting and is confirmed by a steady red LED and followed by the audible warble and flashing red LED. Extend antenna to its full length.

From the armed position, manually release the antenna. Lift the switch and move to the "OFF" then "ON" position again with in 2 seconds. The beacon will begin transmitting and is confirmed by a steady red LED and followed by the audible warble and flashing red LED. Extend antenna to its full length.

3.4 DEACTIVATION

The beacon should not be left in the armed position when it is not in use. ***Warning. Do not hold beacon near face or body while releasing the antenna. Antenna is spring loaded and deploys rapidly***. To deactivate an armed beacon, manually release the antenna, lift the switch and move to the "OFF" position.

3.5 OPERATIONAL NOTES

The EPIRB is designed to float on water but will operate best when held upright out of water. An operational transmission on land should be conducted in an area free of obstructions, which could absorb RF energy and limit radiation patterns.

Position the antenna straight up and extend (perpendicular to ground) and not pointing toward the receiving station. Note that the radiation field null occurs directly off the end of the antenna.

Maintain a visual path where possible between the Beacon and the receiver, since beacons characteristically transmit "line of sight". The Beacon transmits on 121.5 MHz.

SECTION 4 - MAINTENANCE

4.1 GENERAL

The Beacon has been designed for use with a minimum of maintenance required. A checklist is given in this section, and when accomplished periodically, should help to assure emergency operation and extended life use.

Caution: Perform all maintenance operations and checks within a screen room, if available, to prevent inadvertent transmission of emergency signals. If a screen room is not available, use caution in handling the Beacon during servicing to prevent signal transmission.

4.2 BATTERY CHECK AND SERVICE

1. See Section 5.2 for battery check. Replace Battery Pack immediately after extended use or emergency.
2. All routine service must be carried out at ACR or by factory authorized personnel at authorized service centers. In addition to replacing the battery, the o-rings will be replaced and the EPIRB will be hydro statically re-certified. Please call ACR for the location of your nearest authorized service center at least 30 days before expiration date. After the warranty period is over, Battery replacement may be performed in the field. Follow the directions below.

3. The **MINI B_{300}^{TM} ILS H_2ON** EPIRB has a dated battery life. When purchasing a new battery, make sure the battery is fresh. The battery expiry date is obtained by adding the battery manufacturers rated replacement life of 10 years to the date of manufacture. For example, a date code of 6J1313 would have a Battery Expiry Date of October 13, 2006.

   A typical Duracell DL223A battery has a date code of 6J1313. The first alphanumeric character of the code is always a number representing the last digit of the year of manufacture. The second alphanumeric character of the code is always a letter, the position of which in the alphabet represents the number of the month of manufacture. That is: A represents January, B represents February, C represents March, etc.

4. The battery can be user replaced or returned to a BRC (Battery Replacement Center) for service. Call (800) 432-0227 for a BRC near you. To replace the battery, follow directions below.

   a. Remove four (4) screws holding the top cap of the Beacon to the case. Use a no. 2 Phillips screwdriver. Remove top cap and PC board from bottom case being careful not to disturb any electronic components on the PC board.

   b. Remove old battery and place new battery in battery clip with groove side of battery down and flat side of battery up. **Caution:** Make sure flat side of battery is up. Otherwise, the polarity of the battery would be reversed and damage to the battery will occur. The battery also poses a possible fire, explosion, or burn hazard when placed in the battery clip upside down. A semiconductor diode protects the electronics from damage due to battery reversal.

   c. Put the battery expiration date on the flat side of the battery and on the EPIRB case with ACR Part No. A1-20-0857 or equivalent permanent shield label.

   d. Grease the top cap o-ring with Dow Corning number 4 Silicone Grease, ACR Part No. A2-09-0069.

   e. Replace the four- (4) screws holding the top cap to the bottom case of the Beacon. Make sure screws are tight but do not use excessive torque, which could strip the threads in the top cap.

5. All routine service or battery replacement must be carried out at ACR or by factory authorized personnel at authorized service centers. In addition to replacing the battery, the o-rings will be replaced and the EPIRB will be hydro statically re-certified. Please call ACR for the location of your nearest authorized service center at least 30 days before expiration date.

6. Safety Precautions:

   a) **Warning:** To avoid possible fire, explosion, leakage or burn hazard, do not open, recharge, disassemble, heat above 71°C (160°F) or incinerate.

   b) DOT regulations require that minimum packaging standards be met when shipping certain materials. The original shipping container should be retained for this reason. If the original container is lost, please contact ACR Customer Service prior to shipment of unit.

4.3 INSPECTION CHECK

The following checks should be made during the periodic servicing:

1. Check the antenna tip and spring for any signs of damage or corrosion. If antenna has been bent during storage, it is normal for it to maintain a slight bend. This will not effect performance.
2. Check the antenna for any signs of chafing, wear, cracks, or other damage, and signs of resultant corrosion beneath the covering.
3. Check the antenna socket at the cap surface for any sign of looseness or corrosion.
4. Check the Beacon housing for signs of damage or mishandling. Dents, or damage to the top end could result in an operational malfunction during an emergency.
5. If unit has been submerged or sprayed with salt water, it should be thoroughly rinsed with fresh water. Including extending and collapsing antenna several times while submerged in fresh water to purge any salt water.

4.4 PERIODIC OPERATIONAL CHECK

1. To ensure continued reliability, the unit should be checked for operation at least once every 90 (ninety) days, following the procedure of Section 5.2.
2. Do not use cleaners or petroleum distillates.

4.5 PACKAGING AND TRANSPORTATION

The **MINI B_{300}^{TM} ILS H_2ON** contains lithium batteries (solid cathode, total 3.4 grams lithium). The original shipping carton may be used or consult your local transportation authority with regard to applicable regulations for transporting the EPIRB.

SECTION 5 - TESTING

5.1 GENERAL

The following paragraphs detail the Beacon testing procedures.
Note - Read the entire test procedure before testing.

5.2 OPERATIONAL TESTING

The Beacon can be tested by turning it "ON". The test consists of the following steps:

1. The beacon can be manually activated whether in the “OFF” position or in the “armed” position. Manually activating the beacon requires repeated movement of the “ON-OFF” switch. ***Warning - Do not hold beacon near face or body while releasing the antenna. Antenna is spring loaded and deploys rapidly***.
2. Red LED indicator will illuminate continuously for 5 (five) seconds, indicating a functional battery. After the 5 (five) seconds, the LED will blink, confirming RF signal transmission, and an audible warble will sound, confirming RF signal transmission.

NOTE: Tests of more than 5 (five) second duration must be conducted at designated times and duration unless special arrangements are made with the USCG, FCC and/or local FAA authorities. *Operational transmission testing may be executed only during the first five (5) minute period of any hour and only for three tone sweeps or one operational transmission (LED light flashing/audio warble) second, of the audio modulating whichever is longer.*

The **MINI B_{300}^{TM} ILS H_2ON** has a speaker, fed by voltage from the microprocessor and the transmitter, which produces the audible warble. This EPIRB will emit a distinctive warbling sound when operationally tested. Any change in the audible warble, (a loss of sound or intermittent sound), is an indication that you should have your beacon serviced at an authorized service station. *Conduct this test only during the first five- (5) minutes of each hour as indicated above.*

You can verify that your EPIRB is actually transmitting by turning it "ON" near a FM radio tuned to 99.5 MHz. The radio will receive the signal and will broadcast the familiar “warble” through its speakers if the EPIRB is transmitting properly. *Conduct this test only during the first five (5) minutes of each hour as indicated above.*